

HUMAN RESOURCES FOR TREATING NEW CANCER CASES IN SOUTH AFRICA

Executive Summary

The purpose of this report is to describe the human resources needed in South Africa to treat new cancer patients. The population of South Africa is approximately 49.67 million (24.48 million men and 25.19 million women) and the estimated number of new cancer cases in South Africa for the year 2008, based on Globocan data for South Africa as a whole (<http://globocan.iarc.fr/>) was 74688 (38535 in men and 36153 in women) (Table A). The five most common cancers in South Africa are (1) urological (bladder, kidney, prostate and testis), (2) breast, (3) gynecological (cervix uteri, corpus uteri and ovary), (4) esophagus and (5) lung.

Table A: The ten most frequently occurring cancers in South Africa for men and women based on 2008 Globocan data (<http://globocan.iarc.fr/>).

Cancer	Both	Rank	Men	Rank	Women	Rank
All cancers excl. non-melanoma skin cancer	74688		38535		36153	
Urological	9842	1	9159	1	683	12
Breast	8649	2			8649	1
Gynecological	8077	3			8077	2
Esophagus	6439	4	3836	3	2603	3
Lung	6345	5	4579	2	1766	6
Head and Neck	5198	6	3301	4	1687	7
Colorectal	5050	7	3217	5	1833	5
Hematological Malignancies	4476	8	2474	6	2002	4
Liver	3575	9	2436	7	1139	9
Kaposi sarcoma	3287	10	2114	8	1173	8
Melanoma of skin	2341	11	1339	9	1002	10
Pancreas	1614	12	750	11	864	11
Brain, nervous system	1229	13	810	10	419	14

Newly diagnosed cancer patients need pathology, surgery, chemotherapy and/or radiation therapy. The number of oncologists needed is based, therefore, on the number of patients requiring pathology, surgery, chemotherapy and radiation therapy (Table B). This number is estimated from the percentage of patients requiring surgery, chemotherapy and/or radiation therapy for the top ten cancers in both men and women. For developing countries the International Atomic Energy Agency (IAEA) recommends training radiation/clinical oncologists who can prescribe both radiation and chemotherapy for the common solid cancers, instead of separate medical and radiation oncologists. Hematological malignancies are treated primarily by hematologist-oncologists. The number of specialists needed is based upon the number of cancer patients but each city, in order to ensure coverage if one person leaves or goes on vacation, must have at least 2 surgical oncologists, 2 radiation/clinical oncologists, 2 hematologist oncologists, etc.

Table B: Number of Oncologists needed for South Africa's two most populous provinces based on 2013 population estimates (<http://citypopulation.de/>) and 2008 Globocan for new cancer cases (<http://globocan.iarc.fr/>).

	New Cancer Cases	Hematologist Oncologists	Surgical Oncologists	Radiation / Clinical Oncologists	Urologic Oncologists	Gynecologic Oncologists	Pathologists
Northern Cape	28932	7	47	145	16	13	58
Eastern Cape	13110	4	22	66	7	6	27

In addition to oncologists, support staff such as onco-pharmacists, pharmacy technicians, oncology nurses and palliative care specialists is also needed. Many cancer patients require hospitalization for diagnosis, treatment and/or complications, therefore an adequate number of oncology beds will be needed. The number of oncology nurses, onco-pharmacists and pharmacy technicians needed is based upon the number of beds occupied daily by cancer patients while the number of palliative care specialists is based on the number of new cancer cases per year (Table C). The oncology nursing staff for each 24-bed oncology unit (operating 24 hours a day, 7 days a week) comprises of one head nurse and a nurse specialist as well as 13 nurses working 8 hour shifts, 5 days per week.

Table C: Number of Oncology Units, Nursing and Pharmacy Staff needed for South Africa's two most populous provinces based on 2013 population estimates (<http://citypopulation.de/>) and 2008 Globocan data for new cancer cases (<http://globocan.iarc.fr/>).

	New Cancer Cases	Oncology Beds/Day	24 bed Oncology Wards	Onco-Pharmacists	Pharmacy Technicians	Palliative Care Specialists	Oncology Ward Nurses
Northern Cape	28932	451	19	76	114	58	285
Eastern Cape	13110	205	9	36	54	27	135

Since many cancer patients require radiotherapy, appropriately equipped facilities will be needed along with radiation oncology staff (Tables D and E). Radiation oncology staff includes radiation therapy technicians, medical physicists, Linac engineers and radiation oncology nurses in addition to radiation/clinical oncologists. The minimum radiation therapy equipment requirements are at least one of each: Linac, brachytherapy unit, CT simulator, treatment planning computer and dosimetry/quality assurance package.

Table D: Radiation Therapy Staff needed for South Africa's two most populous provinces based on 2013 population estimates (<http://citypopulation.de/>) and 2008 Globocan data for new cancer cases (<http://globocan.iarc.fr/>).

	New Cancer Cases	Radiation / Clinical Oncologists	Radiation Therapy Technicians	Medical Physicists	Linac Engineers	Radiation Oncology Nurses
Northern Cape	28932	145	195	65	17	65
Eastern Cape	13110	66	89	30	8	30

Table E: Radiation Therapy Equipment needed for South Africa's two most populous provinces based on 2013 population estimates (<http://citypopulation.de/>) and 2008 Globocan data for new cancer cases (<http://globocan.iarc.fr/>).

	New Cancer Cases	Linac / Co 60 Megavolt Unit	Brachytherapy Units	CT Simulators	Treatment Planning Computers	Dosimetry /QA Packages
Northern Cape	28932	33	17	17	17	17
Eastern Cape	13110	15	8	8	8	8

NOTE: Guidelines from the IAEA of the United Nations were used to calculate the radiation therapy equipment and staff needed in the setting of a developing country. Guidelines from the Oncology Nursing Society were used to calculate the number of nurses needed. Several other specialty societies were also requested to provide guidelines but in most cases there were none, therefore colleagues active in those fields were consulted for estimating the number of staff needed.